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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/705,220	11/12/2003	Setsuo Yoshida	1344.1127	3544
21171	7590	02/02/2005	EXAMINER	
STAAS & HALSEY LLP SUITE 700 1201 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			KALIVODA, CHRISTOPHER M	
			ART UNIT	PAPER NUMBER
			2883	

DATE MAILED: 02/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/705,220

Applicant(s)

YOSHIDA ET AL.

Examiner

Christopher M. Kalivoda

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☒ Claim(s) 1, 2, 4, 11 and 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 June 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 01/21/2004
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

The drawings are objected to because Figure 4 contains misspelled words in the heading of columns 1 and 2. The word "secion" should be "section". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Figure 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled

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"Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Please see Fig 1 of U.S. Patent 5,912,750 cited in conclusion.

Claim Objections

Claims 1, 2, 4, 11 and 12 are objected to because of the following informalities:

Regarding claims 1, 2, 4, 11 and 12, the word "transmissivity" appears to be a literal translation. It is believed to mean the "transmission".

Regarding claims 2 and 4, the claims contain extra "periods" at the end of the sentence. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors.

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An example can be found in claim 1, lines 2-4 or claim 11, lines 4-6 where the claims describe changing transmissivity along an optical frequency axis and a filter characteristic moving parallel to an optical frequency axis direction.

In addition, the claims generally describe very little structure and describe the invention in terms of functionality or how it works.

Claim 1 recites the limitation "the switching " in line 11. There is insufficient antecedent basis for this limitation in the claim.

In claim 8, the addition of the word "type" (in the last line) to an otherwise definite expression extends the scope of the expression so as to render it indefinite (Ex parte Copenhaver, 109, USPQ 118 (Bd. App. 1955)).

Claim 11 recites the limitation "the switching " in line 11. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4 and 8-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Hiroshi et al., Japanese Publication 06-276154. Regarding independent claim 1 as claimed, Hiroshi et al. teach a variable optical filter (Fig 2b) comprising: first and second filter sections connected in series to each other (Fig 1, ref sign 30 and 20), each having

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a filter characteristic whose transmissivity is changed periodically along an optical frequency axis (para 0014, lines 1-2 since permeability is the same as transmissivity and sine waves are periodic), the filter characteristic having variable transmissivity and capable of being moved in parallel to an optical frequency axis direction, and also the same filter characteristic can be set within a common variable range in the optical frequency axis direction (para 008, lines 1-6 and Fig 3, ref sign 13).

While the reference is silent with respect to "when the filter characteristic of one of said first and second filter sections is required to move in parallel to the optical frequency axis direction to exceed the variable range, relatively controlling the filter characteristics of said first and second filter sections such that the switching is performed from one filter section to the other filter section, provided that the overall filter characteristic of when said first and second filter sections are combined becomes constant", the structure as claimed is present in Hiroshi et al. and the device is thus capable of performing a function such that when the filter characteristic of one of said first and second filter sections is required to move in parallel to the optical frequency axis direction to exceed the variable range, relatively controlling the filter characteristics of said first and second filter sections such that the switching is performed from one filter section to the other filter section, provided that the overall filter characteristic of when said first and second filter sections are combined becomes constant" (See *In re Swinehart*, 169 USPQ 226 (CCPA 1971); *In re Schreiber*, 44 USPQ2d 1429 (Fed. Cir. 1997)).

Regarding claim 2, while the reference is silent with respect to "when said first filter section is in a state in which the filter characteristic thereof is flat with respect to optical frequency so that the maximum transmissivity can be obtained, and the overall filter characteristic is determined by the filter characteristic of said second filter section, then before the parallel movement of the filter characteristic of said second filter section in the optical frequency axis direction reaches a boundary of the variable range, said control section performs the switching from said second filter section to said first filter section by reducing continuously the amplitude of the transmissivity of said first filter section while increasing continuously the amplitude of the transmissivity of said second filter section, provided that the overall filter characteristic of when said first and second filter sections are combined becomes constant", the structure as claimed is present in Hiroshi et al. and the device is thus capable of performing a function such that when said first filter section is in a state in which the filter characteristic thereof is flat with respect to optical frequency so that the maximum transmissivity can be obtained, and the overall filter characteristic is determined by the filter characteristic of said second filter section, then before the parallel movement of the filter characteristic of said second filter section in the optical frequency axis direction reaches a boundary of the variable range, said control section performs the switching from said second filter section to said first filter section by reducing continuously the amplitude of the transmissivity of said first filter section while increasing continuously the amplitude of the transmissivity of said second filter section, provided that the overall filter characteristic of when said first and

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second filter sections are combined becomes constant (See *In re Swinehart*, 169 USPQ 226 (CCPA 1971); *In re Schreiber*, 44 USPQ2d 1429 (Fed. Cir. 1997).

Regarding claim 3, while the reference is silent with respect to "said control section, when performing the switching from said second filter section to said first filter section, controls a phase of said first filter section so that the parallel movement of the filter characteristic of said first filter section in the optical frequency axis direction becomes a state corresponding to the vicinity of the center of the variable range", the structure as claimed is present in Hiroshi et al. and the device is thus capable of performing a function such that when performing the switching from said second filter section to said first filter section, controls a phase of said first filter section so that the parallel movement of the filter characteristic of said first filter section in the optical frequency axis direction becomes a state corresponding to the vicinity of the center of the variable range (See *In re Swinehart*, 169 USPQ 226 (CCPA 1971); *In re Schreiber*, 44 USPQ2d 1429 (Fed. Cir. 1997).

Regarding claim 4, while the reference is silent with respect to "when said first filter section is in a state in which the filter characteristic thereof is flat with respect to optical frequency so that the maximum transmissivity can be obtained, and the overall filter characteristic is determined by the filter characteristic of said second filter section, then before the parallel movement of the filter characteristic of said second filter section in the optical frequency axis direction reaches a boundary of the variable range, said control section performs the switching from said second filter section to said first filter section by reducing continuously the amplitude of the transmissivity of said first filter

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section while increasing continuously the amplitude of the transmissivity of said second filter section, provided that the overall filter characteristic of when said first and second filter sections are combined becomes constant, and said control section successively controls a phase of said second filter section so that the parallel movement of the filter characteristic of said second filter section in the optical frequency axis direction becomes a state corresponding to the vicinity of the center of the variable range, and said control section performs the switching from said first filter section to said second filter section by increasing continuously the amplitude of the transmissivity of said first filter section while reducing continuously the amplitude of the transmissivity of said second filter section, provided that the overall filter characteristic of when said first and second filter sections are combined becomes constant", the structure as claimed is present in Hiroshi et al. and the device is thus capable of performing a function such when said first filter section is in a state in which the filter characteristic thereof is flat with respect to optical frequency so that the maximum transmissivity can be obtained, and the overall filter characteristic is determined by the filter characteristic of said second filter section, then before the parallel movement of the filter characteristic of said second filter section in the optical frequency axis direction reaches a boundary of the variable range, said control section performs the switching from said second filter section to said first filter section by reducing continuously the amplitude of the transmissivity of said first filter section while increasing continuously the amplitude of the transmissivity of said second filter section, provided that the overall filter characteristic of when said first and second filter sections are combined becomes

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constant, and said control section successively controls a phase of said second filter section so that the parallel movement of the filter characteristic of said second filter section in the optical frequency axis direction becomes a state corresponding to the vicinity of the center of the variable range, and said control section performs the switching from said first filter section to said second filter section by increasing continuously the amplitude of the transmissivity of said first filter section while reducing continuously the amplitude of the transmissivity of said second filter section, provided that the overall filter characteristic of when said first and second filter sections are combined becomes constant (See In re Swinehart, 169 USPQ 226 (CCPA 1971); In re Schreiber, 44 USPQ2d 1429 (Fed. Cir. 1997).

Regarding claim 8, the first and second filter sections each includes a Mach-Zehnder interferometer filter (Fig 2b and Fig 1, ref sign 20 and 30).

Regarding claim 9, Hiroshi et al. teach an optical transmission system for collectively amplifying a wavelength division multiplexed signal light (para 2, lines 1-3) using an optical amplifier arranged on an optical transmission path (Fig 2, ref sign 2). While the reference does not specifically state " and also compensating for a tilt occurring in the wavelength division multiplexed signal light using at least one gain equalizer to repeatedly transmit the wavelength division multiplexed signal light, wherein said gain equalizer includes a variable optical filter recited in claim 1, there is a filter as described above adjacent to an amplifier (Fig 2, ref sign 3 and 2 respectively) so the structure as claimed is present and the invention is thus capable of compensating for a tilt occurring in the wavelength division multiplexed signal light using at least one gain

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equalizer to repeatedly transmit the wavelength division multiplexed signal light (See *In re Swinehart*, 169 USPQ 226 (CCPA 1971); *In re Schreiber*, 44 USPQ2d 1429 (Fed. Cir. 1997).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiroshi et al., Japanese Publication 06-276154. Regarding claim 7, Hiroshi et al. teach the limitations of claim 1 as described above. While the reference does not specifically state a plurality of period filters with mutually different periods connected in series, the first and second filter sections can each comprise a plurality of period filters with mutually different periods connected in series (para 0014, lines 1-4) since Fourier series method is taught as an alternative.

Regarding claim 10, Hiroshi et al. teach the limitations of claim 9 as described above. Furthermore, the variable optical filter, first and second filter sections are arranged in different repeating intervals since the filter can be used in a long-distance transmission system (Description of Prior Art paragraph, lines 3-6).

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiroshi et al., Japanese Publication 06-276154 in view of Denkin et al., U.S. Patent 6,266,169.

Regarding claim 5, Hiroshi et al. teaches the limitations of claim 1 as described above. However, the reference is silent with respect to optical amplification section for compensating for losses occurring in said first and second filter sections.

Denkin et al teach that with MZI filters, amplifiers are used to equalize insertion losses (col 4, lines 42- 47).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Hiroshi et al. and include optical amplifier for the purpose of equalizing insertion losses to improve the signal strength.

Regarding claim 6, Hiroshi et al. in view of Denkin et al. teach the limitations of claim 5 as described above.

However, the references are silent with respect to the optical amplification section is arranged between the first and second filter sections.

It is not inventive to rearrange parts of an invention (see MPEP 2144.04; In re Japiske, 86 USPQ 70).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to insert an optical amplification section between the first and second filter sections for the purpose of equalizing insertion losses of the first filter to improve the signal strength entering the second filter.

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Conclusion

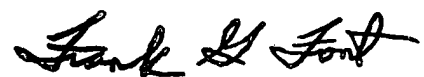
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent Application Publication 2003/0035619 to Pfeiffer describes cascaded MZI filters whose transmissivity varies periodically. U.S. Patent 5,912,750 et al. describes a MZI filter with heaters on the coupling sections and arms of the MZI (Fig 1) similar to that in Fig 2 of the instant application.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher M. Kalivoda whose telephone number is (571) 272-2476. The examiner can normally be reached on Monday - Friday (8:30 - 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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